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Quasi-linear fluxes in heliotron configurations OSAMU YAMAGISHI, MASAYUKI YOKOYAMA, HIDEO SUGAMA, National Institute for Fusion Science — Quasi-linear particle and energy fluxes by the linear gyrokinetic modes (for example, ITG modes) are investigated in heliotrons. For this purpose, the MHD magnetic configurations to model the LHD like parameters (R/a$\sim$6, L=2, M=10) are considered, which are obtained by using the VMEC. It is well known that the neoclassical ripple transport is enhanced by the helically trapped particles for low collisional regime, while its magnitude is strongly affected by the slight shift of the magnetic axis in the poloidal plane. On the other hand, in the case of quasi-linear anomalous transport, the trapped particles have tendency to make the particle fluxes negative. This tendency is strong in the heliotron configurations due to the effects of the helically trapped particles. The resulting particle pinch will be balanced with the neoclassical particle fluxes to determine the density profiles. The resulting density profiles will then affect the quasi-linear energy fluxes. By considering the different heliotron configurations with or without the neoclassical optimization, the anomalous energy transport and confinement properties will be discussed. The electromagnetic effects (for example, by KBMs), and collissional effects on the fluxes will also be shown, if possible.

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